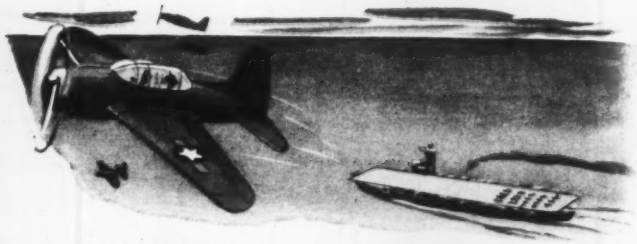
ENGINEERING NEWS-RECORD

Bailey trusses come to the rescue as repairs start on Grace Bridge over the Cooper River

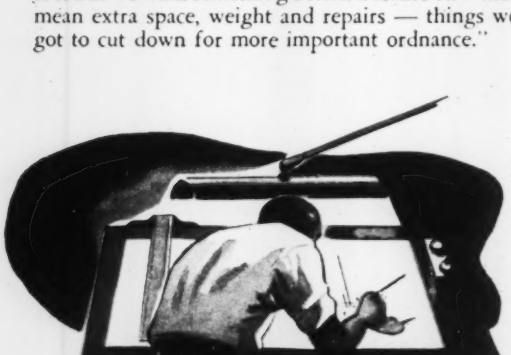
Getting Navy Planes into Air Fast was Job for "Super" Motors!



"What We Want" said Navy, "are ½-hour rated elevator motors that'll lift planes from carrier hangar decks, up at 42 ft, down at 52 ft a minute. And they must be exceptionally dependable — under all conditions — because these planes have to be in the air when we need 'em!"

"Look, Here's What We're Using Now. Two standard winch motors on each elevator . . . doing a good job too. But we want something better. Because *two* motors mean extra space, weight and repairs — things we've got to cut down for more important ordnance."

Whew! High elevator speed, low motor speed . . . stronger . . . lighter . . . smaller — this'll take 6 months to design! Then we rolled up our sleeves, tackled first the problem of developing extremely high torque for fast starting under load — solved it with a special field.



How To Get Light Weight — yet maintain the generous motor design for which we are famous — presented still another problem. This one we solved by skilful substitution of copper for steel . . . of war-proved fabrication for casting. Yes, we cut down weight *and* maintained ample, generous design!

Came the Big Surprise! After we put on finishing touches — special corrosion-resistant marine parts, new kind of insulation — we added up design time . . . just one month! And much-needed motors were rolling off the lines less than 4½ months later.

A 1998

Significance: The creative engineering that goes into solving *special* motor problems, like this one, also points out new ways to build better *standard* motors for you! Watch for these new and better motors from A-C. ALLIS-CHALMERS, MILWAUKEE 1, WISCONSIN.

Wait 'til you see the NEW
ALLIS-CHALMERS MOTORS!

HEAR THE BOSTON SYMPHONY: *Every Saturday Evening, American Broadcasting Co.*

News of the Week

ENGINEERING NEWS-RECORD • APRIL 11, 1946 • VOLUME 136 • NUMBER 15

Army engineers start work on four veterans' hospitals

Receive authorization for preliminary operations on facilities to cost $36 million—First work under new program of aid to Veterans Administration's engineer staff

The U. S. Army Engineers have been authorized to make surveys and foundation tests as a preliminary to preparation of working drawings and specifications for four Veterans Administration hospitals, according to Lt. Gen. Raymond A. Wheeler, Chief of Engineers.

The method to be followed on these projects is outlined as typical of the procedure planned for the several hospitals the Army Engineers will build for the Veterans Administration as part of the recently-announced program calling for 80 hospitals expected to cost about $448,000,000 (*ENR* Feb. 21, vol. p. 265).

The four hospitals are located at Newark, N. J., Brooklyn, (Ft. Hamilton) and Buffalo, N. Y., and Louisville, Ky. In addition, the engineers have been authorized to make studies and reports on proposed hospital additions at Atlanta, Ga., Alexandria, La. and San Fernando, Calif.

According to figures released by the Veterans Administration, the estimated cost of the four new hospitals will be $36,236,262. The Hamilton Hospital at Brooklyn—a general medical type—is estimated to cost $10,848,763—the Buffalo Hospital—general medical, $10,388,664; the Newark project—general medical, $10,423,706; and the Louisville hospital, also general medical, $4,577,129. No estimates were made on the three additions.

Private architects to be employed

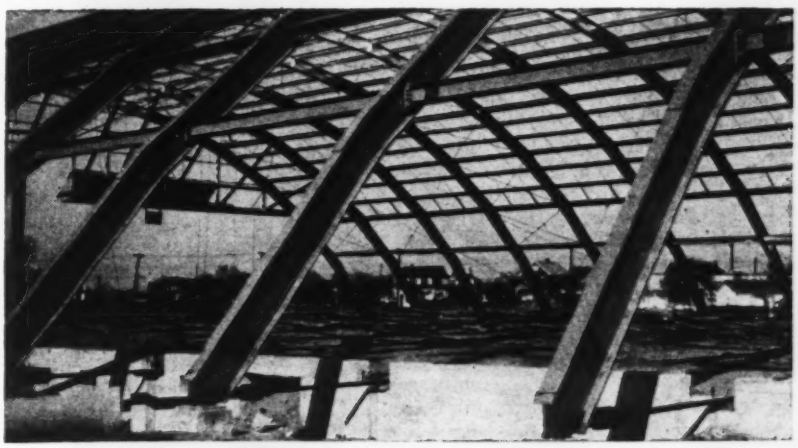
All architectural, engineering and construction work on VA hospitals erected by the Army Engineers will be performed by civilians under contract, Gen. Wheeler said. The work in general will be handled on the same basis as other civil works of the Army Engineers, through the division and district engineers in whose territory the hospitals are to be built.

Architect-engineers will be used on all projects, but, because general criteria, guide specifications, standards and functional layouts will be furnished by the Chief of Engineers for each of the various types of hospitals, it is believed that fees should be less than normal architect-engineering fees for complete designs. Architect-engineers will be hired on a negotiated lump sum basis.

Construction will be done by contracts awarded on a competitive basis, with force-account work to be performed only in unusual cases. The right will be reserved to negotiate with the lowest bidder in the event the bid is considered too high.

Closest cooperation will be maintained with the Veterans Administration on all questions, not only between the Office of the Chief of Engineers and the Veterans Administration in Washington, but between field officers and the deputy administrators in the field. Brig. Gen. John S. Bragdon, Director, Military Construction, OCE, will coordinate the program.

District engineers will be authorized to make awards of contracts for $1,000,000 or less. Awards in excess of $1,000,000 and not in excess of $3,000,000 will require the approval of the division engineer while the approval of the Chief of Engineers will be necessary on awards over $3,000,000.



Hangars rise for New York's Idlewild airport

Only 900 tons of structural steel is being used in two 200 x 300 ft. hangars being erected at Idlewild Airport, on the south shore of Long Island, some 13 miles southeast of midtown New York City.

Structurally, the arches are 27 in. deep, 91 to 114 lb. rolled sections at 20 ft. center-to-center, resting on spread concrete footings and tied by 2½ in. upset-end rods. Doors are 160 x 25 ft. with 10 ft. additional opening at the center to permit passage of high airplane tail fins. The roof is asbestos protected metal. The arches are erected in three segments—the outside two supported temporarily by poles while the center section is connected.

Contract for the two hangars—the first at the airport site—is held by Arch Roof Construction Co. of New York, and fabrication and erection of the steel was done by American Bridge Co. Cost of the two hangar structures, with doors but without floors or mechanical installation, is $320,000. (Story on page 6 of this issue gives details of new authority approved to finance the airport.)

NEWS IN BRIEF

In telegraphic form, here are latest news developments on the engineering and construction front during the week.

Housing—Eight *Rochester, N. Y.*, banks have formed Rochester Civic Homes Inc., as a non-profit housing group, and plan to build 38 veterans' housing units on a 10-acre site. . . . *Minneapolis, Minn.*, contractors reported plans ready for 127 homes, to cost in excess of $1,000,000. . . . Five hundred residences, to cost over $4,000,000, are planned in *Clifton Heights, Philadelphia, Pa.*, suburb. . . . Construction of 70 two-bedroom homes for veterans is under way at *Phoenix, Ariz.* . . . Plans have been completed for a $5,000,000 apartment house project at *Germantown, Pa.* . . . A new residential subdivision, to contain 150 homes, is planned for *Atlanta, Ga.* . . . Warner West Corp. announced plans for 2,200 homes, to cost $20,000,000, for *Philadelphia, Pa.*

Sewage Disposal—The town of *Dutton, Mont.*, has received an FWA loan to finance plans for a new sanitary sewer system and treatment plant. . . . Construction of a $4,460,000 expansion to the present sewage treatment works was recommended as a solution of water supply problems of *Toledo, Ohio.* . . . *East Savanna, Ill.*, approved a $250,000 bond issue to finance sewer system extensions. . . . *Mechanicsburg, Pa.*, received FWA aid to plan a $142,000 pumping station and treatment plant. . . . *Santa Barbara, Calif.*, will seek bids on construction of $130,000 worth of sanitary sewer lines. . . . *Olympia, Wash.*, employed consulting engineers to plan a $2,000,000 improvement program.

Water Supply—*Kingsport, Tenn.*, employed engineers to prepare plans for a $750,000 extension to the present water system. . . . *Landisville, Pa.*, received bids for waterworks improvements, including a 100,000-gal. storage tank, distribution system, and pumping station. . . . *Atlanta, Ga.*, said it was ready to proceed with a war-delayed $1,750,000 modernization and expansion program, as soon as funds are available. . . . Work has started on extensions to the water system of *Yarmouth, Mass.*, that will include extension of the system to the villages of *South Yarmouth, Bass River* and *West Yarmouth.*

Bond Issues—*Salisbury, N. C.*, will vote May 1 on a $1,750,000 issue to finance water supply and sewage disposal system improvements. . . . *Cook County, Ill.*, commissioners considered a special election for a $70,000,000 issue to finance superhighway construction. . . . *East St. Louis, Ill.*, will vote on a $1,500,000 issue for school construction. A $2,000,000 issue to finance sewer improvements, will be on the same ballot. . . . *Delavan, Ill.*, will vote May 9 on a $190,000 issue for water and sewer improvements.

Industrial Building—The B. F. Goodrich Co. has awarded contracts for a $4,000,000 plastics processing plant at *West Point, Ga.* . . . Carrier Corp. will proceed with a $2,000,000 expansion program at *Syracuse, N. Y.* . . . Victor Chemical Co. will spend $5,000,000 to expand its plant at *Nashville, Tenn.* . . . Armstrong Cork Co. will build an insulation manufacturing plant, to cost $6,000,000, at *Macon, Ga.*

Highways—*Mississippi* awarded seven contracts, totalling $1,700,000, rejected bids on four others as too high. . . . Nearly 512 miles of *Washington* state highways will be undergoing reconstruction or new work in 1946.

Supreme Court to review "noisy plane" case

A case involving a property-owner's claim for damages on account of low-flying Army planes is to be decided by the U. S. Supreme Court.

On April 1 the court agreed to review a damage award of $2,000 made by the U. S. Court of Claims to Thomas Lee Causby, who contended that Army planes using the Greensboro-High Point, N. C., airport caused him fright, loss of sleep, and loss of a commercial chicken business.

The ruling of the claims court was that a property owner may prohibit any use of the air space above his land if it "interferes with his right to light, air, view, or the safe and peaceful occupation and enjoyment of his land."

Removal of Boston span urged by shippers

Complete removal of the Meridian Street Bridge, which crosses Chelsea Creek between East Boston and Chelsea, Mass., is urged by shipping interests of Boston as an alternative to costly alterations and repairs to the present structure.

In April, 1940, the Secretary of War notified the mayor of Boston that alterations were required in the bridge "to provide a drawspan affording a clearance of 175 feet." The city was allowed three years to complete the alteration. But the war interfered and the time was extended to April, 1946. Mayor Curley has requested a further delay.

Calendar of Meetings

NATIONAL

American Society of Civil Engineers, spring meeting, Bellevue-stratford Hotel, Philadelphia, Pa., April 17-19.

American Wood Preservers' Association, 42nd annual meeting, Netherlands Plaza Hotel, Cincinnati, Ohio, April 23-25.

President's Highway Safety Conference, Washington, D. C., May 8-10.

REGIONAL

Montana Section, American Water Works Association, Finlen Hotel, Butte, Mont., April 12-13.

Arizona Sewage and Water Works Association, Tucson, Ariz., April 18-20.

Wisconsin Section, American Society of Civil Engineers, Milwaukee, Wis., April 25.

Florida Engineering Society, 13th annual meeting, Jacksonville, Fla., April 25-27.

New England Sewage Works Association, Pickwick Arms Hotel, Greenwich, Conn., May 17.

Pacific Northwest Sewage Works Association, Gearhart Hotel, Gearhart, Ore., May 22.

Pacific Northwest Section, American Water Works Association, Gearhart Hotel, Gearhart, Ore., May 23-24.

New York State Sewage Works Association, spring meeting, Hotel Hamilton, Utica, N. Y., May 24-25.

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CPA lists offices to handle applications under new building curtailment order

Offices will deal only with problems arising from non-housing urban construction projects—urban housing remains under FHA control

Numerous district construction offices established to handle applications under the new Order No. 1 curtailing construction to assist the veterans housing program (*ENR* Apr. 4, vol. p. 459) were announced April 4 by the Civilian Production Administration. These offices, their addresses, and the district managers are listed below. Cities and managers have been selected for other area offices, as indicated by the second listing, but the office addresses will not be known until office space is obtained.

The district construction offices have one function only, namely the handling of area non-housing construction problems. Queries and applications dealing with urban housing—non-veteran as well as veteran—are handled by the local Federal Housing Administration offices. Matters dealing with farm housing or other farm construction are handled through county agricultural conservation committees.

No CPA activities other than non-housing and non-farm construction come within the authority of that agency's district construction offices. Persons wishing to contact the agency on other than construction are advised to contact the CPA, Social Security Building, Washington 25, D. C.

Addresses of CPA district offices

(NOTE: The first office listed for each region is also regional office for that area.)

Region 1 (Main, Vermont, Rhode Island, New Hampshire, Massachusetts, Connecticut.)
- Boston, Mass.—55 Tremont St.
- Hartford, Conn.—119 Ann St.

Region 2 (New York, New Jersey, Maryland, Pennsylvania, Delaware, District of Columbia, including Arlington & Fairfax Co's, Virginia.)
- New York, N. Y.—43rd Floor, Empire State Bldg.
- Buffalo, N. Y.—1132 Rand Bldg.
- Albany, N. Y.—Room 1206, 112 State St.
- Newark, N. J.—20 Washington Pl.
- Camden, N. J.—Post Office
- Philadelphia, Penn.—Broad St. Station Bldg.
- Pittsburgh, Penn.—1810 First National Bank Bldg.
- Wilmington, Del.—Room 301, Pennsylvania Office Bldg.
- Baltimore, Md.—Room 305, 22 Light St.
- Washington, D. C.—Room 2051, Social Security Bldg.

Region 3 (Ohio, Kentucky, Michigan, West Virginia.)
- Cleveland, Ohio—1289 Union Commerce Bldg.
- Columbus, Ohio—1037 North High St.
- Cincinnati, Ohio—6th Floor, Big Four Bldg.
- Toledo, Ohio—Room 15, Old Post Office Bldg.
- Detroit, Mich.—800 Boulevard Bldg.
- Louisville, Ky.—Wave Bldg.
- Charleston, W. Va.—c/o FHA, Chamber of Commerce Bldg.

Region 4 (Georgia, North Carolina, Alabama, Tennessee, South Carolina, Mississippi, Florida, Virginia.)
- Atlanta, Ga.—1608 Candler Bldg.
- Richmond, Va.—906 North Lombard St.
- Greensboro, N. C.—1105 Guilford Bldg.
- Columbia, S. C.—108 South Gregg St.
- Jackson, Miss.—3951 Council Circle
- Jacksonville, Fla.—c/o PBA, P. O. Box 4910
- Tampa, Fla.—3116 Oaklyn Ave.
- Miami, Fla.—3rd Floor, City Hall, Coral Gables

Region 5 (Illinois, Wisconsin, Indiana.)
- Chicago, Ill.—226 West Jackson Blvd.
- Indianapolis, Ind.—826 Circle Tower
- Milwaukee, Wis.—312 East Wisconsin Ave.

Region 6 (Missouri, Nebraska, Iowa, Kansas, Arkansas, Colorado.)
- St. Louis, Mo.—410 Old Customs House
- Little Rock, Ark.—c/o FHA, Old Post Office Bldg.
- Des Moines, Iowa—708 Liberty Bldg.
- Denver, Colo.—523 Continental Oil Bldg.
- Topeka, Kan.—c/o FHA, Topeka National Bank Bldg.

Region 7 (Texas, Oklahoma, Louisiana, New Mexico.)
- Dallas, Tex.—1221 Mercantile Bank Bldg.
- Fort Worth, Tex.—Chamber of Commerce Bldg.
- Houston, Tex.—Electric Bldg.
- San Antonio, Tex.—Transit Tower Bldg.
- Oklahoma City, Okla.—c/o FHA, Cotton Exchange Bldg.
- New Orleans, La.—Room 407, Canal Bldg.
- Albuquerque, N. Mex.—436 North Hermosa Ave.

Region 8 (Southern California, Arizona, Utah.)
- Los Angeles, Calif.—Room 1220, 1031 South Broadway
- San Diego, Calif.—308 Broadway Bldg.
- Salt Lake City, Utah—310 Atlas Bldg.

Region 9 (Northern California, Washington, Oregon, Idaho, Nevada, Montana, Wyoming.)
- San Francisco, Calif.—1355 Market St.
- Boise, Ida.—Baird Bldg.

Region 10 (Minnesota, North Dakota, South Dakota.)
- Minneapolis, Minn.—Midland Bank Bldg.
- Sioux Falls, S. Dak.—City Hall Bldg.

Work to begin soon on new San Diego pier

Costing upwards of $1,000,000, a new municipal pier will be built at San Diego on which construction is expected to begin some time this summer.

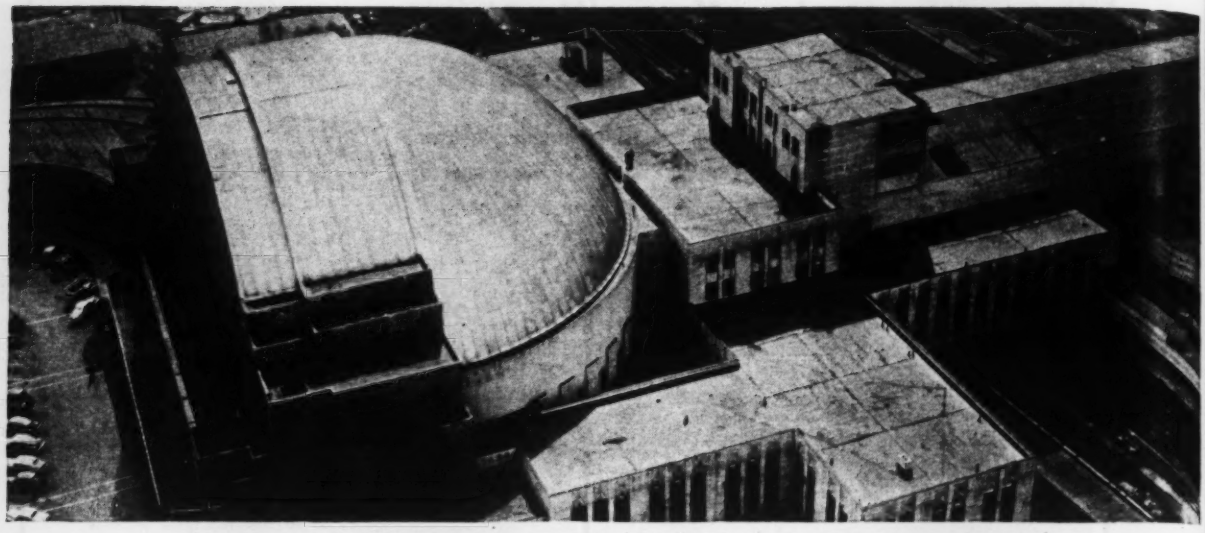
Plans of the harbor commission indicate that the first phase of the project will consist of building one side of the mole pier, under a contract estimated at between $300,000 and $400,000. Construction of the entire pier will be stretched over a several-years' period.

Complete Florida starch plant

Completion of a root starch plant at Clewiston, Fla., part of a $7,000,000 development program initiated by the U. S. Sugar Corp. was announced recently.

The plant, occupying 6 acres, represents a major part of the development. Additional facilities include water supply, sewage disposal and power house. A feature of the plant, in the foreground above, is the "starch house" said to be the largest and most modern unit in the world, utilizing glass brick, glazed tile and concrete in the five buildings which comprise the unit.

The plant is scheduled to reach a production of 75,000,000 lb. of starch and 30,000,000 lb. of livestock feed from waste by the end of this year. Starch is manufactured from sweet potatoes grown in the area.



Air view shows the Union Terminal at Cincinnati, Ohio with its new aluminum roof complete

Complete aluminum roof for Cincinnati railroad terminal

When it became apparent, late in 1945, that the roofing on the dome-shaped main terminal and two barrel arches of Cincinnati's Union Terminal would need replacement, engineers for the Union Terminal Co. determined on the use of aluminum sheets.

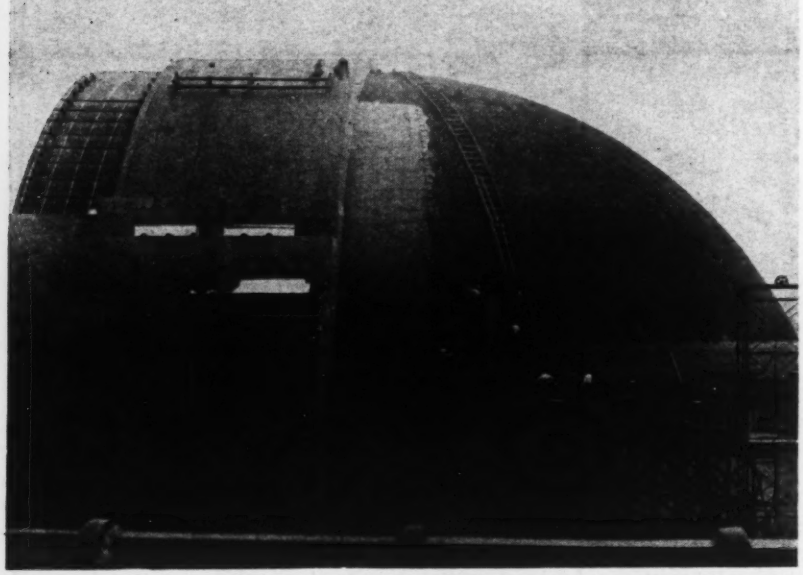
The material offered the advantages of light weight and good appearance, harmonizing with extensive aluminum fittings already installed as decorative features. Although a total of 32,000 sq.ft. of roofing material was used, the new roof weighs about one-twentieth as much as the non-metallic covering previously used.

With the exception of flat areas, where ⅛-in. aluminum sheet was used, the entire dome roof, barrel and parapet walls was covered with 14-gage aluminum sheet, of which a total of 1123 sections were used. Because of the contour of the dome area, it was neccessary to taper each section of sheet to insure precise fitting.

In addition to the preformed aluminum field sheets, about 11,500 lineal feet of extruded aluminum batten and cap was used. Alcoa alloy 53S was employed for the extruded sections, and the sheets were formed of Alcoa alloy 3S-½H. Prior to installation of the aluminum roof, it was necessary to remove the old roof and repair the underlying structure for the new surface. Concrete forming the base for the old roofing was left in place, as was a 30-lb. layer of felt. Over this layer a 1-in. layer of Armstrong cork was mopped on, followed by another layer of 30-lb. felt. Over the last layer of felt a layer of 15-lb. asbestos felt was placed with the outer surface dry.

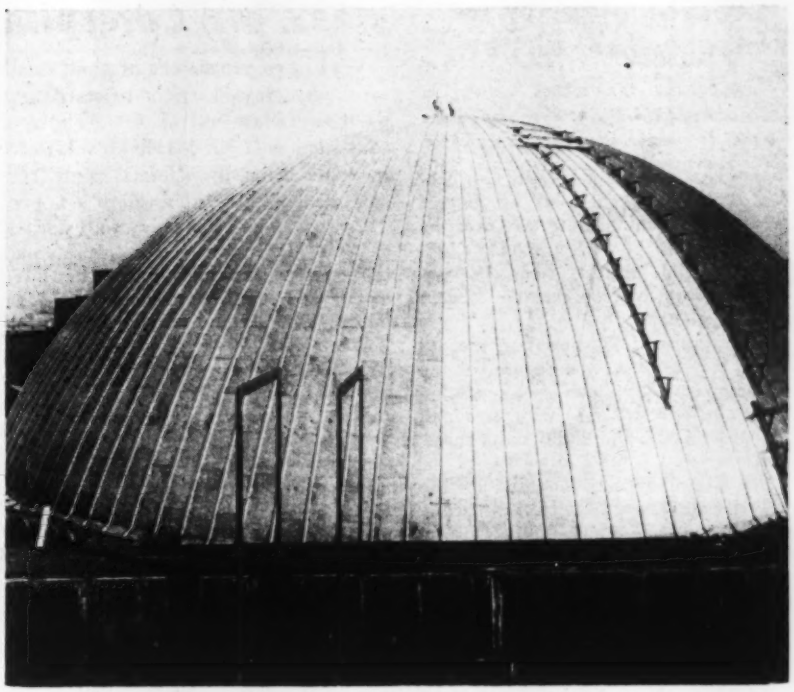
In order to anchor the aluminum sections securely in place, holes were drilled through the felt and cork and about 1½ in. or more into the concrete to receive expansion shields. After the holes were drilled and the shields placed, they were filled with a caulking compound prior to placing anchor bolts. Roof plug anchor bolts were spaced at an interval of 22 in., as were the cap bolts. Slots were cut in the battens to permit sliding during expansion and construction.

For ease of construction it was necessary to build sections of scaffold shelving sufficiently wide to allow a workman to reach the bolt areas easily and to



Before putting on new roof, workmen first had to remove weather-worn roofing installed when the terminal was built. Concrete and a 30 lb. layer of felt previously installed was left in place, and new insulating layers were put on top, to serve as a base for the final aluminum sheets.

Detail of joint in the sheathing, showing use at corner. Specially-built scaffolding (upper right) was used to support planks like steps.



With work more than half completed, this photo from the adjoining roof gives a good idea of the size of the domed roof by comparison with the tiny figures of workmen at top. Step-like scaffolding at right is being moved to the uncompleted section.

handle the sections of aluminum sheet, bar and battens with minimum effort. The engineers worked out a system of scaffolding which was so constructed that it could be shifted both laterally and vertically.

Installation proceeded with the bolting down of the adjoining two extruded bars to the pre-inserted plugs. After this followed the laying of sheets and capping, bolting them together as the crew worked on a vertical section. The aluminum sheets were placed in interlocking vertical sections, with the upper sheets progressively overlapping the ones below. The top sheet at the upper end of the battens with the caps adjoining the top section was fabricated with a covering cap at its lower end to avoid leakage at that point.

The completed roof and parapet walls present a compact network of interlocking sliding aluminum joints capable of withstanding any conceivable amount of expansion and contraction.

Actual construction on the terminal roof was begun on Oct. 18, 1945, and final sections were laid Jan. 31, 1946. Fellheimer & Wagner Associates, of New York, were the architects. Erection was directed by the Overly Mfg. Co. of Greensburg, Pa., whose patented type batten was used throughout.

Navy offers commissions in Civil Engineer Corps

The Bureau of Naval Personnel has announced that reserve and temporary Navy officers of the line, as well of the staff Corps, may submit applications for appointment to the Civil Engineer Corps, U. S. Navy.

Officers should have appropriate background for Civil Engineer Corps by reason of Engineering degree, Navy experience, or civilian occupation.

A formal announcement said that many Engineers served in the line of the Navy, volunteering their services at times when additional officers were not needed in the Civil Engineer Corps. Many of these officers wanted to return to engineering jobs, and the new policy gives these officers an opportunity of reapplying for engineering work in the Navy.

Red Cross used $5,000,000 worth of lumber in 1945

During the calendar year 1945 the American Red Cross was authorized to issue a top priority rating for more than $5,000,000 worth of construction materials, for the most part lumber, according to a recent summary issued by M. A. L. Gardner, national building adviser.

The supplies used by the Red Cross were absolutely essential materials required to repair dwellings and other property damaged in the more than 270 disasters in which the organization's services were required.

Mr. Gardner, in an appeal for the continuing cooperation of the construction industry, said that the Red Cross on its field disaster staff maintains trained building advisers to survey the damage to buildings and extend priority ratings.

March wind blows down brick wall at Syracuse

Three men were injured, ten others had narrow escapes, and damage estimated at between $10,000 and $12,000 was done when a wall 242 ft. long and 18 ft. high, which was being erected on East Brighton Avenue, Syracuse, N. Y., collapsed under the buffeting of a sudden strong wind on March 22.

Brown & Hand Construction Co., Inc., is in charge of the construction job—a warehouse for Loblaw Groceterias, Inc. At the time of the accident a dozen laborers were unloading brick, while other workmen were setting blocks on the opposite wall.

The inside area between the two walls apparently acted as a pocket and wind pressure was built up on the uncompleted wall.

Create authority to finance N. Y. airports

New agency to assume control of city's huge field at Idlewild—may issue bonds to complete construction of field.

Governor Thomas E. Dewey of New York April 4 signed a bill creating a special airport authority to take over the existing facilities of New York City's great Idlewild airport, complete construction work, and operate the airfield on completion.

Under terms of the new law, the authority may also—at the request of the city administration—take over operation of the city's present major air terminal, LaGuardia Field, and additional airports in the future.

The bill, which was opposed by the city's former mayor, F. H. LaGuardia, and by unofficial statements of airline operators planning to use the new field, was an outgrowth of present Mayor William O'Dwyer's charge that under its present financial difficulties New York could not risk its position by further direct financing of construction of the airfield. Eventual cost of the field to the city has been estimated at $91,000,000.

Under arrangements originally worked out by the former mayor, New York would have built and financed structures wanted by individual airlines for private use (*ENR* Jan. 24, vol. p. 125). Mayor O'Dwyer's administration, however, almost immediately on taking office Jan. 1 deleted the $45,000,000 from the capital budget provided for this private construction.

The authority—which city officials indicated probably would not begin to function for several weeks—will consist of three non-salaried members, to be appointed by the mayor. It is empowered to issue its own bonds up to the amount of $250,000,000, but with the provision that the yield to investors on the original sale would not exceed three and one-half percent. Authority members, including Lt. Gen. James Doolittle, were named last week.

Issuance of these bonds would thus permit the city, in effect, to borrow money for the airport, outside of the limitations set on its indebtedness by state law.

Commenting on the "well grounded" criticisms of the bill, Governor Dewey said he approved the measure because "it is represented to me (by New York City officials) that this is the only means by which the airport can be completed.

"The city administration is entitled to the opportunity to complete the airport in the manner which it considers the only one available," the New York governor concluded.

G. M., Caterpillar push building

Very large expansions of plant facilities involving extensive new construction are under way or about to start in programs for General Motors Corp. and the Caterpillar Tractor Co. The recent restrictions placed on non-residence construction (*ENR* March 28 vol. p. 441) do not apply to these projects because in some cases they had already started, and apparently they will provide employment in regions where it is needed.

Construction is already well started on new plants of the General Motors Corp. for the assembly of Buick, Oldsmobile and Pontiac automobiles at Wilmington, Del., Framingham, Mass., and Atlanta, Ga. These projects, designed by Albert Kahn Associated Architects and Engineers, Inc., follow a general pattern and are of about equal size.

Materials used in all the GM plants are to be structural steel frame with metal deck, and metal floor construction. The exterior walls are of brick and glass, with stone trim in the office building.

The assembly plant at Wilmington is slightly larger than the others, being approximately 800 x 1300 ft., with a second floor one-third that size, and with a large penthouse above the second floor.

These structures, representing new buildings on new GM factory sites, were not halted by labor trouble, as were expansion projects on previously occupied company property. Structural steel erection for the Wilmington and Framingham projects has been under way since the turn of the year and the new assembly operations are expected to be completed in ample time for the production of 1947, model cars.

A 50% enlargement at Caterpillar

The largest expansion program in the history of Caterpillar Tractor Co.—one that will enlarge the floor area of the Peoria, Ill., plant by nearly 50%, is revealed in an announcement by L. B. Neumiller, president of the company.

Scheduled to be carried out progressively so that production can be increased as soon as possible, the expansion is expected to permit manufacture of more tractors by September of this year.

Completion of the huge undertaking, which will add approximately 1,800,000 sq. ft. of floor space—about 41 acres—to the Peoria plant, is expected by the summer of 1948.

A new factory for the manufacture of diesel engines is the major project in Caterpillar's program. This plant will require 925,000 sq. ft. under roof for the manufacture of improved models of present types and sizes of diesel engines, as well as additional models already past the research, development and engineering stages.

Other projects in the program include a building with 400,000 sq. ft. for expansion of tractor manufacturing facilities; a 150,000 sq. ft. addition to the parts department building; two buildings of nearly 90,000 sq. ft. area for additional heat-treating facilities; a 200,000 sq. ft. building for maintenance services and facilities for the entire plant and for the sales, advertising and service departments.

Senate group ok's subsidy for housing

In reporting out the Patman Housing Bill (H.R. 4761) April 5 the Senate Banking Committee approved the appropriation of $600,000,000 as subsidies to increase the output of building materials needed for housing construction and the development of new types of building products that could be used to aid the veterans' housing program.

In approving the subsidies the committee concluded that the 2-year program of Administrator Wyatt of the National Housing Agency (*ENR* Feb. 14, 1946, vol. p. 256), which calls for the start of construction of 1,200,000 housing units this year and 1,500,000 next year, cannot be accomplished unless subsidies are provided. The committee also went on record in favor of ceilings on the selling price of existing homes.

The committee's report is in decided contrast with the action of the House, which passed the Patman Bill March 7 by a vote of 357 to 24, but in doing so defeated the subsidy and ceiling proposals alike (*ENR* Mar. 14, vol. p. 377).

April 8 the Senate started debate on the bill and whether or not the Senate as a whole will approve subsidies remains to be determined. However, one group of senators has already started a move to reduce the subsidy aid from the amount approved by the Committee to $300,000,000. If this revised plan is adopted by the entire Senate, it is uncertain as to whether the House would agree to a compromise measure.

Recently the Senate Banking Committee also reported out the Wagner-Ellender-Taft Housing Bill (S. 1592) and (H.R. 4899) which is the long range housing measure now before Congress.

Bailey span patches South Carolina bridge

Long over water highway crossing restored to service while permanent repair work proceeds

Seeking to restore a vital traffic artery as quickly as possible, engineers for the South Carolina highway department on April 4 bridged a 240-ft. gap in the John C. Grace Memorial Bridge over the Cooper River at Charleston, S. C., with a 310 ft. Bailey-type bridge. The bridge —one of the longest over water crossings in the Southeast—can now be used by automobile traffic, while permanent repair work proceeds.

A 220-ft. section of the structure was torn out early in March (*ENR* March 7, vol. p. 327) when a drifting freighter, driven by high winds, crashed into the structure.

Knocked out by the ship's superstructure were three 80-ft. deck plate girders on steel towers, supporting a 20-ft. width of roadway.

At the suggestion of S. E. Liles, Jr., vice president of the Tidewater Construction Corp., Norfolk, Va., the length of Bailey bridge needed for the repair was borrowed by the South Carolina state highway department from the Army Engineers. The trusses were assembled on the high side of the bridge, and rolled into place by the use of launching equipment, as was done with similar structures in combat. A total of 310 ft. of Bailey, providing a 10 ft. 9 in. roadway, is being used, coupled with a 60-ft. wooden ramp at the upper end and a 135 ft. ramp at the lower end to provide access. The Bailey will be supported in the center by a steel tower, prefabricated and placed on concrete slabs constructed on concrete piles already driven in the river bottom. The truss will be 4 ft. above the permanent bridge deck, to give sufficient room for construction of a permanent roadway while traffic passes overhead.

J. E. Dennis is superintendent for the Tidewater Company and W. J. Gooding, Jr. is bridge engineer for the South Carolina highway department.

It is believed that this is the first time a Bailey bridge has been used in this way for a combination of temporary and permanent repairs of a structure.

Originally built as a privately-owned toll bridge, the structure was purchased by South Carolina about a year ago and was to have been freed of tolls about July 1.

Department officials said that permanent reconstruction may require several months of work. During the period when the bridge was completely out of service, motor traffic was re-routed by way of Monck's Corners—a town located about 50 miles away.

WASHINGTON HIGHLIGHTS

• ***Gulf waterway*** The Vicksburg, Miss., Division of the U. S. Army Engineers has approved a project relating to a new channel between the Gulf Intracoastal Waterway and the Mississippi River, according to information obtained in Washington. The survey was authorized in May, 1943. The channel will run from Morgan City to a point on the Mississippi River in the vicinity of Port Allen opposite the lower limit of the Port of Baton Rouge. The proposal is to provide a channel 12 ft. deep by 125 ft. wide from the Mississippi-Atchafalaya section of the Gulf Intracoastal Waterway through Lower Atchafalaya River (Berwick Bay) and the borrow pit of the East Atchafalaya Protection Levee, to and through Bayou Sorrel Lock, then along the present waterway through Lower Grand River to Indian Village and then by way of Bayou Grossetete and a new cut through a new terminal lock and entrance channel to the Mississippi River.

It is estimated that the federal cost will be $8,000,000 for construction. About $100,000 annually will be required for maintenance, operation and care over and above that now required. Local interests are required to furnish free of cost to the U. S. all lands, easements, rights-of-way, and spoil disposal areas required for initial construction and subsequent maintenance. They will also be required to defray the cost of reconstructing or replacing existing highway bridges and utility crossings, and also provide adequate terminal and transfer facilities open to all users on equal terms under regulations to be approved by the Secretary of War. The initial non-federal cost is estimated at $450,000.

• ***Postpone MVA hearings*** The Senate Agriculture Committee has postponed hearings on the bill (S.555) creating a Missouri Valley Authority. Thus, it would appear that the possibility of establishing an MVA is extremely remote at this time, as this action will prevent for the time being the issue coming to final vote before the Senate. Previously, two committees of the Senate, the Commerce Committee and the Irrigation and Reclamation Committee, voted adversely on the issue after extensive hearings.

• ***Airport appropriation*** The House of Representatives April 2 agreed to the conference report on the airport bill (S. 2) which, when agreed to by the Senate and made law by the President's signature, will provide $500,000,000 of federal aid for a 7-yr. airport construction program (*ENR* Mar. 28, vol. p. 448). This money is to be matched on a 50-50 basis beginning July 1, 1946, and will limit federal expenditure to $100,000,000 during any one fiscal year. Also provided in the bill is $3,000,000 for airport planning by the CAA and $20,000,000 on a 50-50 matching basis for airports in U. S. territories.

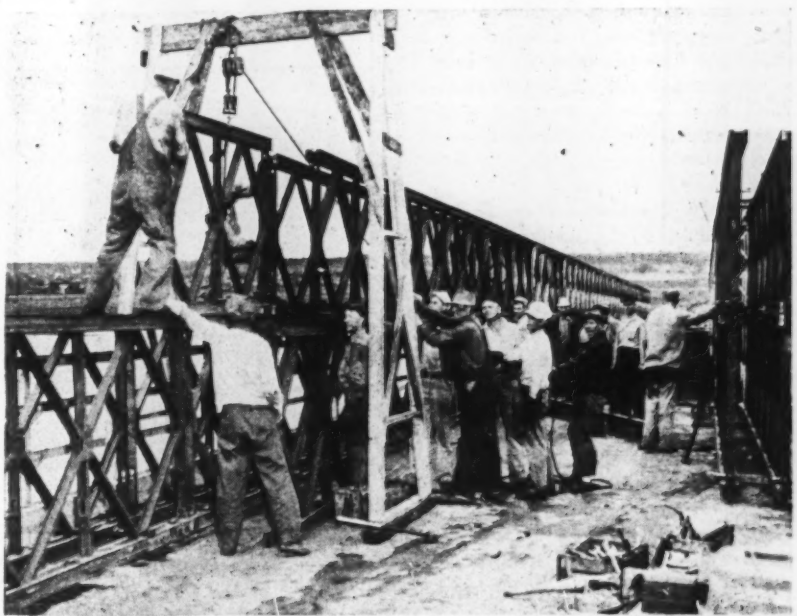


photo by R. A. Reilly

Workmen assemble Bailey sections prior to launching them downgrade to repair gap in John P. Grace bridge. Temporary repairs including Bailey, done in a week.

DEVELOPMENTS BEYOND U. S. BORDERS

Digested from reports by Engineering News-Record correspondents and the McGraw-Hill World News Bureau

Army construction equipment sales depot becomes "school" for European contractors—Mexico rebuilds ports—Formosa seeks help

An unplanned—but highly successful—educational course in American construction techniques, as well as in U. S. construction equipment, has resulted from a large-scale public exhibition of Army machinery set up to assist sale of the machines in equipment-hungry Europe.

Organized at an Engineer depot located on what was once one of the largest German airfields at Chievres, Belgium, some 35 miles west of Brussels, the display was prepared originally to assist the Army-Navy liquidation officers in disposing of machinery declared surplus by occupation forces on the continent.

At the suggestion of Lieut. Col. G. J. Helis, C.O. of the depot, the display was combined with a complete technical and informational service to explain to Europeans the possibilities of the machinery. The idea has been an immediate success. The daily roster of visitors reads like the register of a prewar international hotel. Dutchmen interested in tractors; Belgians looking for cranes for repairs, Scottish shipbuilders, harbor authorities from France and Belgium, Rhodesians seeking equipment for South African airfields, Swiss and Russians, are all in a day's work.

The exhibition covers four acres, and includes a former German hangar which houses a small-tool collection. All items are labelled in English and French with Army nomenclature, manufacturers' names, and descriptions of work which the machine will do. A "tour" of the exhibit includes visits to repair shops where demonstrations of maintenance and repair are given.

Venezuela—The Venezuelan Department of Public Works, at Caracas, said recently it would spend some $2,092,000 this year for new construction machinery and trucks—most of the equipment to be bought in the United States.

The department said that three consignments of machinery, purchased by a private company, had already arrived at Guanta, for use in construction of a new cement plant there for the Compania Anonima Venezolana.

Ports and Harbors . . .

Mexico—Rejuvenation and reconstruction of two major west-coast Mexican ports is well under way, according to the Mexican government.

The free port of Salina Cruz (see accompanying map) is now nearing completion, with its reconstructed harbor in full operation. The project is the first part of an ambitious program aimed at reviving Mexican Isthmus trade, and will include modernization of Puerto Mexico on the Caribbean coast and construction of a new truck highway to supplement the existing railway connecting the two isthmian ports.

The semi-governmental corporation Puertos Libros Mexicanos, which is in general charge of the rehabilitation program here, said such work included construction of a new sea-wall, and enlargement of docking and warehousing facilities, as well as dredging the shifting sands from the harbor area.

At the same time, the Board of Development at Acapulco—another major Pacific Coast port—made public extensive plans for converting the city into a first-class resort and business city, at a cost of more than $24,000,000.

The plan includes four principal features: An adequate and sanitary supply and distribution system for drinking water; a municipal drainage system, development of a beach front park, and completion of a sea front boulevard to carry several lanes of traffic and to include pedestrian walks and landscaping.

Mexico's bid for a larger share of Isthmian trade is being strengthened by improvement of the free port of Salina Cruz, and construction of a highway from this port to the Caribbean port Puerto Mexico. The port of Acapulco, too, is to get a face-lifting.

Reconstruction . . .

Formosa—The aid of American construction engineers will be sought in the rehabilitation of bomb-battered cities and industries in Formosa, says General Chen Yi, governor-general of the island for the Chinese government.

Speaking at Taihoku, capital of the island, Gen. Chen said he planned to institute a 5-year rehabilitation program for Formosan industry, and a 3-to-5-year plan for cities. He said that he was not as yet ready to disclose details of the plans, but added that foreign engineers "particularly Americans" would play "an important part" in the programs. He pointed out that the island's principal industries were oil, aluminum, cement and power production—most of which has been cut sharply on account of air-raid destruction during the Japanese occupation. The cities of Keelung, Takao, Tainan and Kagi were listed as among those most badly in need of reconstruction.

England—The Portsmouth city council has approved plans for the complete replanning of the city, to achieve a population distribution of not more than 100 persons per acre—a move that will reduce the number of people living on Portsea Island (on which the city is built) to about 160,000. A unique phase of the plan, also, is that it lumps all hospitals and public assistance units into a "hospital center" near the center of the city.

Germany—Expenditure of about $66,000,000 for the reconstruction of badly-battered Berlin has been decided upon by the city's government, with about $9,000,000 being allotted to repair and reconstruction of homes. The home-repair program is expected to start immediately, and more than 100,000 workmen may be employed in the work.

Meanwhile, city authorities at Cologne reported that while worst-damaged sections of the Cologne Cathedral will be temporarily repaired by the end of this year, several years will be required for complete restoration of the edifice. The cathedral sustained some 14 direct bomb hits during the war period.

Highways . . .

Mexico—Four trunk highways, connecting strategic commercial points in Mexico, are slated for completion this year, as a result of a government appropriation of $35,000,000 in its 1946 budget.

Completion of the highway from Ciudad Juarez, opposite El Paso, Tex., to Mexico City; a trunk highway from Matamoros, opposite Brownsville, Tex., to Mazatlan on the Pacific Coast and from Mazatlan to Mexico City, and extension of the Inter-American Highway from Oaxaca to San Cristobal Les Casas in Chiapas State, are planned.

England—The Durham and Northumberland County Councils have taken initial steps to promote a bill in Parliament for permission to construct a vehicular tunnel under the River Tyne from Jarrow to Howden. The cost is estimated at $15,000,000 for a 4-year job.

Venezuela—The Venezuelan Department of Public Works has appropriated funds to finance a survey for a new highway connecting Caracas with its port city of La Guaira. The present 22-mile highway was built through the mountains more than 20 years ago, but is now becoming inadequate because of its narrowness and sharp curves.

Public Works . . .

Puerto Rico—In a series of bills signed by Governor R. G. Tugwell, the Puerto Rican Government has cleared the way for major public improvements. Included were bills that will: Appropriate $2,100,000 for construction of hospitals and medical centers; authorize the construction of a highway bypass in San Juan to ease traffic bottlenecks, and eliminate (at a cost of $500,000) the Cano San Antonio—an open stream in the municipality of Arecibo that is used at present for collection of sewage from about a third of the city.

Panama—Panama City has authorized construction of a $5,000,000 tuberculosis hospital within the next two years, according to Octavio Vallarino, minister of health.

Venezuela—Venezuela will spend nearly $13,500,000 on water systems and drainage work. The largest project is a $10,000,000 job to provide new water supplies for Caracas.

Colombia—Municipal public works to cost about $12,000,000 are being undertaken by Bogota, with about $5,000,000 to be spent for expanding the capacity of the waterworks, and between $6,000,000 and $7,000,000 for opening up and improving principal streets.

Dominican Republic—The Public works department reports that public buildings now under construction represent an expenditure of more than $3,000,000. Included are a $2,500,000 University City in the Capital, Ciudad Trujillo, and a $1,461,000 capitol building at that city; a hotel at Santiago and a normal school at Moca.

Additionally, the department reported American contractors at work on a $1,400,000 water supply improvement project for Ciudad Trujillo.

Flood Control . . .

China—The first shipment of an order of piles, pile-driving equipment, and railroad equipment that will ultimately cost $3,000,000 is already enroute to Chengchow, as the Chinese government rushes to reclaim some 2,000,000 acres of farmland flooded by release of Yellow River water to halt Japanese armies, and by flood-time breaks in the river's banks.

An estimated 20,000 Chinese laborers will be engaged in repairing bridges, dikes and flood-control works, and an additional 20,000 will be employed elsewhere on the river.

Lieut. Col. Ralph W. Olmstead, director of UNRRA operations in China, said the work should be completed before the end of 1946, to permit some 500,000 farmers to return to the land.

Meanwhile, working against the normal June deadline for Yellow River floods, other UNRRA engineers rushed labor and materials to a point between Chengchow and Kaifeng, where in 1938 the river broke through its banks in one of the country's worst floods.

India—Designs for a huge multiple-purpose dam on the Sutlej River are being prepared at Denver, Colo., by the International Engineering Co.—a subsidiary of Morrison-Knudsen Co., Inc.

To be known as Bhakra Dam, the project will be constructed "some time in the future" by the Public Works Department of India. It will entail a concrete dam on the river, about 100 miles southeast of Lahore—capital of Punjab province. Probable cost will be $130,000,000 (*ENR* Nov. 22, 1945, vol. p. 694.)

The dam will impound sufficient water to irrigate some 4,000,000 acres of farmland, and hydro-electric power production features are also to be included in the design.

No construction bids have as yet been called for.

American Engineers leave for China work

H. W. Morrison, president and general manager of the Morrison-Knudsen Co., held a conference in San Francisco recently with men who will respesent his firm under a contract with the Chinese national government to make a comprehensive survey and recommendations as to means of restoring China's transportation system, and extending it to all parts of the country. Fifteen engineers will represent the company in China.

Seated, left to right, are: Phillip J. Norton; Ralph Tudor, chief of the project; Mr. Morrison; F. C. Ching, representing the Chinese national government; Lewis Roberts; E. F. Koerner; Robert M. Phinney. Standing: W. A. Dexheimer; A. H. Baer; Nick Pearson; Jack Schnur; Fred Craddock; Tom Borman; Magnus Hjalmarson; C. P. Dunn; Harry P. Hart, and David R. Straub. Mr. Tudor and Mr. Ching have already left for China.

Spectacular fire damages major Canadian bridge

Fire, originating in the wooden deck of the 45-year-old Alexandra Bridge connecting Ottawa, Ont. and Hull, Que., during the evening of March 29, destroyed a considerable part of the bridge when it spread to piles of pulpwood below the bridge on the waterfront in Hull, producing the most spectacular conflagration in the Canadian capital district since fire swept the two cities in 1900. Damage to the bridge, paper mill and pulpwood is estimated at between three and five million dollars.

The bridge, built in 1901 by the Dominion Bridge Co., of Lachine, Que., was originally designed to carry tracks of the Pontiac Pacific Junction Ry. across the Ottawa River. Later, the structure was taken over as part of the Canadian Pacific Ry., and roadways were bracketed out from either side to carry vehicular traffic and tracks of the Hull Electric Ry.

Fire was first discovered in the roadway deck of the Hull approach to the main spans over the Ottawa River, below which were the pulpwood piles of the E. B. Eddy Co. Before firemen could reach the bridge, embers from the fiercely burning creosoted deck had set fire to the pulpwood.

The resulting conflagration caused the collapse of the bracketed roadways and may have damaged the main railway girders beyond repair. Firemen from Ottawa checked the fire in the first of the main river spans but not before the track and possible some of the bridge members were badly damaged.

All traffic between the two cities is being rerouted over other bridges.

Pumped storage to firm Wisconsin River Power

Four coaxial flow pumps with adjustable blades, or propellers, 110 in. in diameter will lift water 25 ft. from the Wisconsin River during periods of flood flow to a reservoir of 18,730,000-cu. ft. capacity on the Little Eau Pleine River, 25 miles south of Wausau, Wis., according to an annuoncement by the Wisconsin Valley Improvement Co., Wausau, which has submitted the project to the Wisconsin Public Service Commission for approval. Release of stored water when the Wisconsin River is low will improve the power output of a string of hydro plants downstream.

Cost of the project is estimated to be about $2,500,000. Construction will start as soon as approval is obtained. It will take the pumps about 31 days to fill the new reservoir, and the owner expects to complete the work in time to fill the lake during next spring's thaws. According to M. W. Kyler, vice president and general manager, the reservoir will increase the firm power generating capacity of the river by 49 percent. Released water will pass through ten dams with an aggregate head of 236 ft. Potential development of the river could eventually increase this total head to 320 ft.

To form the reservoir, bids will be invited for an earth-fill dam 16,100 ft. in length, 270 ft. wide at the base and 12 ft. wide at the crest. Included in the dam is a concrete spillway section 125 ft. long, equipped with four tainter gates.

The storage lake will be named the George Mead Reservoir in honor of George W. Mead, president of the Wisconsin Valley Improvement Co., and also, president, of the Consolidated Water Power and Paper Co., Wisconsin Rapids, which is one of the stockholders in the improvement company. Use of the large pumps, each of which will have capacity of 5,000 cu. ft. per sec. against a 25-ft. head, was conceived by W. F. Thiele, chief engineer of Consolidated. The other stockholders in the improvement company are seven power and paper producing concerns.

Photo by J. G. Regalbuto

Brightly lighting the night sky, fire wrecks a part of the 45-year old Alexandra Bridge connecting Ottawa, Ont., and Hull, Que. A paper mill on the Hull side of the Ottawa River (at right), apparently ignited by sparks from the burning bridge-deck, had its stock of wood-pulp almost completely destroyed. The fire burned for almost a full 24 hours before being completely extinguished.

Standard determination by ASA facilities urged

Reversing a wartime trend, Henry A. Wallace, Secretary of Commerce, has proposed to return to private enterprise the important function of determining industrial and consumer standards, the American Standards Association says.

In a letter to Charles E. Wilson, president of General Electric Co. and chairman of the Policy Committee on Standards, Mr. Wallace characterized negotiation and publication of standards through private initiative as "eminently desirable." In the same letter, Mr. Wallace reviewed his plan to reorganize the Commerce Department's Bureau of Standards, and said that to the extent that the work of the ASA is strengthened in accordance with recommendations of its Policy Committee, the department is prepared to encourage the use of ASA facilities for the "initiation, development and publication of standards."

In a 3-way correspondence among Mr. Wallace, the Policy Committee and the ASA, the committee has given assurance that industry will make possible the necessary extensions of ASA facilities to enable it to render all desired service. Through a change in its constitution, ASA has broadened the scope of its work so that it may deal with any standards or standardization projects deserving recognition, whether in engineering, consumer goods or other fields.

New power development starts at Berlin, N. H.

Preliminary steps in the construction of a $1,750,000 power development at Berlin, N. H., for the Public Service Co. of New Hampshire have started by Sanders Engineering Co., Portland, Me.

The development includes the erection of a 2-story power house, 50 x 50 ft., served by a steel pentstock, 1,700 ft. long, taking water from the Androscoggin River. A Baldwin Locomotive Works waterwheel with a General Electric 10,000 kw. generator will be installed. Under a head of 83 ft., the power capacity of the station will be 13,500 hp.

Ample plant capacity for housing seen

A study of the productive capacity of plants manufacturing building products indicates that existing plants can produce during 1946 enough of currently scarce materials and equipment to permit complete fulfillment of the government housing program (*ENR*, Mar. 21, vol. p. 396), according to the Producers Council, Inc.

The study on which the Producers Council report was made was conducted by a committee of economists at the council's request.

"The study shows unmistakably that there is no need to appropriate new sums from the treasury for the purpose of subsidizing new or marginal manufacturers, as has been proposed by Mr. Wyatt," the committee said, "nor is there any need to adopt a program of tax amortization to expedite the building of new plants.

"Existing capacity is more than ample, provided that capacity is put to work with the aid of price ceiling adjustments."

The study revealed that in most instances existing plants producing currently scarce materials were operating in January at only 27 to 72 percent of capacity, because of inadequate price ceilings. In the council's study, the practical capacity of building product plants at the present time is assumed to be the actual output in 1941, except where additional capacity is known to have been added in the intervening years.

However, for the purpose of conservatism, the council's estimates of attainable 1946 production of scarce building products has been reduced below the output which the building products industry actually attained in 1941. These estimates for 1946, then, are based on the assumption that needed price ceiling adjustments will be made immediately and that labor disputes will not retard production. In brief, the figures, shown in the accompanying table, refer to an output in 1946 ranging from 5 to 36 percent less than that actually attained as recently as 1941.

The production capacity figures used by the Producers Council are in close agreement with those published in the table in *Engineering News-Record*, March 21, 1946, vol. p. 396. Only three differences need be cited: 360 million concrete blocks in the *ENR* table, as compared to 500 million in the Producers Council table—a result of uncertain industry statistics; 1,860 million square feet of plywood in *ENR*, as compared to 1,000 by the Producers Council—the latter being more accurate as representing that part of plywood production available for construction; and 72 million sq. ft. of cast iron radiation in the *ENR* table as compared to 84 million—the latter being based on the all time production record of 1941, since which time some plant capacity is believed to have been scrapped.

The column in the *ENR* table showing "additional plant capacity needed" was for all construction in 1947, including the total housing goals, whereas the Producers Council table is confined to 1946 requirements, which it is claimed can be met without additional new capacity.

Housing needs halt Hollywood road building

Los Angeles' critical housing shortage is expected to delay construction on the city's long-planned, virtually ready-to-go, $25,000,000 Hollywood Parkway, on which work was scheduled to start this year. According to Spencer V. Cortelyou, State District Highway Engineer, razing of housing units in the path of the Parkway has been indefinitely postponed because of the housing shortage.

With $7,500,000 already invested in rights of way, and plans for the artery from downtown Los Angeles to outlying Hollywood virtually completed as far as Vermont Avenue, immediate construction will have to be limited to a few grade separations included in the project. These will be limited to sites not occupied by dwellings.

Critical shortage of form lumber, and, in a lesser degree, of steel, were other factors influencing the decision.

Approximately 1,000 dwelling units are in the Parkway rights-of-way already acquired, and vigorous objections of tenants and other interested groups brought assurances the project would not be pushed. (*ENR* Nov. 29, 1945, vol. p. 709)

Railroad track to be relocated at Conemaugh

Relocating Pennsylvania Railroad tracks near the proposed Conemaugh Dam will require 16.2 miles of new track to eliminate four crossings of the Conemaugh River. Other new construction will include an 1100-ft. and an 800-ft. bridge over the Conemaugh.

BUILDING MATERIALS REQUIREMENTS AND PRODUCTION CAPACITY, 1946

(Source—The Producers Council, Inc.)

CRITICAL MATERIALS	Unit	Practical Plant Capacity[1]	Probable 1946 Production[2]	Quantities Needed to Meet Wyatt Program[3]	Capacity in Excess of Housing Requirements		Production in Excess of Housing Requirements		Excess of Capacity Over Probable 1946 Production	
					Quantity	Percent	Quantity	Percent	Quantity	Percent
Bathtubs	Thousands	1,230	1,050	800	430	34.9	250	23.8	180	14.6
Brick	Million	4,900	4,300	2,666	2,234	45.5	1,634	38.0	600	12.2
Clay Tile	Thousand tons	1,126	1,000	193	933	82.8	807	80.7	126	11.2
Concrete Blocks	Million	500	450	374	126	25.2	86	19.1	50	10.0
Gypsum Board and Lath	Million sq. ft.	2,776	2,650	1,766	1,010	36.4	884	33.4	126	4.5
Lumber, Millwork and Flooring	Million bd. ft.	28,100[4]	18,000[4]	6,200	21,900	78.0	11,800	65.5	0,100	35.9
Plywood	Million sq. ft.	1,000[5]	700[5]	888	112	11.2	−188	−26.8	300	30.0
C. I. Sewer Pipe	Thousand tons	565	400	261	304	53.8	139	34.7	165	29.2
Clay Sewer Pipe	Thousand tons	1,380	1,150	103	1,277	92.5	1,047	91.0	230	16.7
C. I. Radiation	Million sq. ft.	84	54	44	40	47.6	10	18.5	30	35.7

[1] Measured in terms of actual 1941 production except as noted. Obsolete and unusable capacity not included.

[2] Anticipated output based upon feasible increases above present levels of production, barring strikes.

[3] Required to complete 875,000 units under the Wyatt program for 1,200,000 starts. Materials are included for 150,000 additional units through conversion.

[4] Construction lumber production only. Total output in 1941 was 36.5 billion board feet.

[5] Available for construction purposes out of 1.7 billion sq. ft. of softwood plywood produced in 1941. Greater capacity is available, the Producers Council found, but there is an acute deficiency of peeler logs suitable for standard grades.

MEN AND JOBS

W. G. Reaves, formerly with the third division highway office at Fayetteville, N. C., has been named assistant purchasing agent for the North Carolina Highway Department, with headquarters at Raleigh.

Frank B. Sarles of San Francisco has been appointed assistant city engineer of Martinez. **Leonard McClintock** is city engineer.

Murvin Johnson, a former employee of the Wisconsin State Highway Department, has been appointed Barron County highway engineer at Rhinelander, Wis. Mr. Johnson is a graduate of the Wisconsin Institute of Technology.

H. V. Appen, of the J. A. Jones Construction Co., Charlotte, N. C., has been named general project superintendent on the construction of the $18,500,000 flood control dam on the Cumberland River near the Kentucky-Tennessee border.

Lloyd Gensel, assistant division engineer of the Atlanta office of the Public Buildings Administration, will become division engineer there on July 1. Mr. Gensel will replace **A. E. Sanderson,** promoted to supervising engineer in the Washington office of the PBA.

Harry Neal, Columbus, Ohio, chief engineer of the traffic and transportation division of the Ohio Highway Department, has been named chairman of the technical committee of the National Safety Council.

J. B. Marshall, engineer of the Charlotte, N. C., planning commission and former city manager of Charlotte, has been appointed also to serve as consulting engineer for the city zoning commission and as acting manager of the Douglas Municipal Airport at Charlotte.

A new engineering company has been formed at Estherville, Ia.—Rowat and Murray Engineering Co., composed of partners **J. A. Rowat** of Estherville and **Lawrence W. Murray** of Belmond. Rowat, who formerly was Emmet County engineer, will serve as part time city engineer of Estherville.

J. L. Allan, engineer of Dartmouth, N. S., for 13 years, has resigned.

Herbert Eastwood of Jacksonville, N. C., who has been connected with a private engineering firm, has been named city engineer at Jacksonville.

John F. Willis, West Hartford, Conn., has been named associate highway engineer in Connecticut in charge of bridge design.

Don E. Atkins has been appointed Kittitas County engineer at Ellensburg, Wash., to succeed **Sam J. Dumbolton,** who resigned to become assistant Spokane County engineer.

R. W. Simpson, civilian sanitary engineer with the Army Air Forces since 1942, has been appointed sanitary engineer for Gilbert Associates, Inc., Reading, Pa.

John F. Laboon, Allegheny County, Pa., director of public works, has been named chairman of the new county sanitary authority of five men. Another engineer member is **Charles A. Finley,** director, Pittsburgh department of works.

Allan S. Harrison, William F. R. Ballard and **Frederick H. Allen** have formed the housing firm of Harrison, Ballard & Allen, New York.

Hugo E. Bothe, chief of the building inspection department at Kenosha, Wis., since 1942, has resigned to open an office as a consulting engineer.

George Kusler, civil engineer, is a member of the staff of the newly-organized firm of General Engineers Oregon, Ltd.

Fred L. Breckon has resigned as city engineer at Ellensburg, Wash. He has been with the city 15 years, previously having been an engineer for the Bureau of Reclamation on the Kittitas project.

Col. Leland H. Hewitt, who has been with the Pacific Division, Army Engineers, has been named resident member of the Beach Erosion Board at Washington, D. C., succeeding **Col. Xenophon H. Price. Col. Charles L. Hall,** division engineer, North Atlantic Engineer Division, has also been appointed to the board.

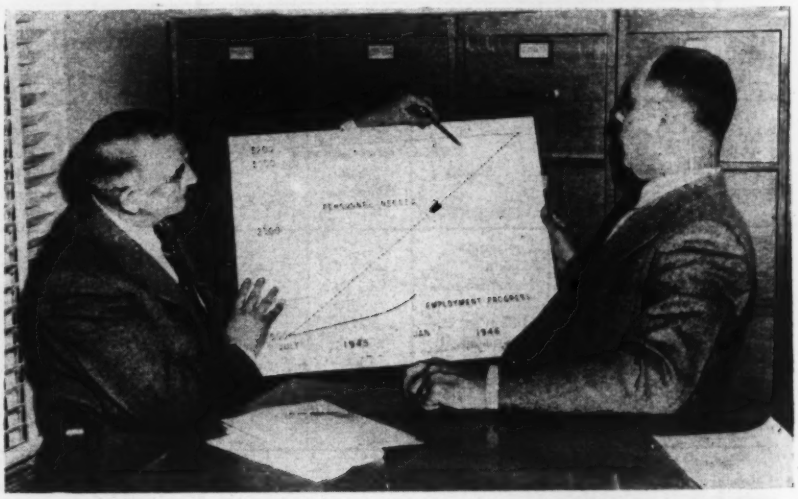
Kenneth M. Dunnan, for many years with the New England Power Association and more recently with the Boston Navy Yard as designing engineer, has joined the new Utilities Supply Corp. which will distribute water works supplies and materials in New England, offices being at 53 State St., Boston 9, Mass.

H. H. Biendarra has joined the hydraulic department of the Illinois Division of Waterways in Springfield as civil engineer, after six years with the U. S. Geological Survey in Iowa City, Ia.

William D. Wisley joins the hydraulic branch of the Illinois Division of Waterways, Springfield, after several years with the Seabees.

Patrick H. Lynch, who for 43 years has been chlorinating water of the Susquehanna River to make it potable for residents of Binghamton, N. Y., is retiring.

H. O. Waddell has been appointed divisional engineer of the Canadian Na-



Ralph Lowry (left) assistant chief engineer of the Bureau of Reclamation, shows C. L. Edwards, director of the 13th U. S. Civil Service Region, the size of the job ahead in recruiting engineering personnel for the bureau's Denver, Colo. office.

tional Railways at Toronto, Ont., succeeding **G. W. Demeoe,** promoted to engineer, maintenance of way, Central Region.

M. Scheiman, formerly with the U. S. Geological Survey and more recently with the Navy Department, has joined the office of Henry W. Taylor, consulting engineer, New York.

E. V. Spence, member of the Texas Board of Water Engineers, has been awarded the Legion of Merit for outstanding work as post engineer at Camp Swift, Tex.

Eugene L. Christian, an engineer who for 20 years has been handling diversions from the San Joaquin River for private irrigation companies, has been appointed assistant water master of the Central Valley Project, Calif. Mr. Christian will assist **Martin H. Blote,** chief of irrigation operations, of the Branch of Operation and Maintenance.

R. P. Boyd has withdrawn from the former partnership of Toth, Boyd & Porath, consulting municipal engineers of Green Bay, Wis., and has opened offices in Eau Claire to specialize in design of airports and sanitary installations.

Fred R. Cheatham, assistant city engineer at Pullman, Wash., since his discharge from the Army in December, 1945, has succeeded **John Quiner** as assistant city engineer in The Dalles. Quiner resigned to enter private engineering business at Eugene.

Back to Civilian Activity

Clarence K. Dion, captain, has resumed his post as engineer and superintendent of the water and sewer departments, Westerly, R. I.

Harry Otis Wright, Jr., Marine Corps, has joined the firm of Public Airport Services, Inc., Washington, D. C., as chief engineer.

Richard C. Lennox and **Joseph C. Matthews,** majors, have established a consulting engineering organization at Indianapolis, Ind.

G. A. Blackburn, major, of Aylesford, N. S., has returned after overseas service with the Canadian army. He was on the engineering faculty at St. Francis Xavier University. Antigonish, N. S. He plans to resume teaching.

Vernon D. Goode, captain, has returned to Charlotte, N. C. He is vice-president of Goode Construction Corp.

E. B. Boynton, lieutenant colonel, Corps of Engineers, has resumed as manager of the Richmond, Va., office of Wiley & Wilson, engineers.

Percy Z. Michener, colonel, has joined Sverdrup and Parcel, St. Louis, Mo., consulting engineers.

R. S. Lieurance, colonel, Corps of Engineers, has been appointed project engineer of the Boysen Unit of the Missouri Basin project.

Newlin D. Morgan, Jr., major, Corps of Engineers, has returned as assistant professor of civil engineering at Rutgers, New Brunswick, N. J.

George Huff has started work in the office of John Kearns, Champaign, Ill., city engineer. Other additions to Kearns' staff are: **Bruce Kelly, Tom Wiley,** and **Fred Ilseman.**

George R. Carter, lieutenant, formerly in the Navy, has opened a civil engineering office at Du Quoin, Ill.

Charles E. McKee, colonel, retiring Fifth Service Command engineer, has been appointed chief engineer in the Ohio State Highway Department's Bureau of Location and Design. He was cihef engineer in the bureau of maintenance in 1933 and 1934.

George F. Nicholson, captain (CEC) USNR, until recently public works officer and officer in charge of construction for the San Francisco Naval Shipyard, will reopen his Los Angeles and Washington, D. C., consulting offices in four months.

Appointment of **H. Morgan Noble,** former U. S. Navy lieutenant, as engineer in charge of the Orange County, Calif., harbor district, is announced.

V. M. Capesius has been appointed city engineer of Ventura, Calif., filling a position left vacant since Oct. 1942, when former city engineer, **Carl Froerer** resigned to enter the U. S. Army. Capesius, served with the Seabees during the war.

James J. Dwyer, after service with the Navy, has been appointed superintendent of the light and water plants at Hudson, Ohio. He succeeds **Ray Pettingell,** who retired after 30 years service.

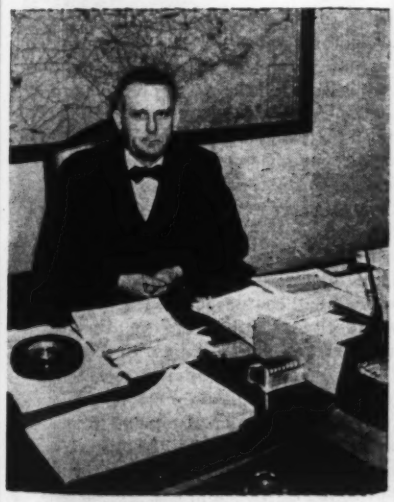
Harold P. Ferguson, recently general in the U. S. Army and former chairman of the Mississippi River Commission, has joined the staff of the Prairie Farm Rehabilitation Administration, Regina, Sask., in connection with the St. Mary's River Dam project.

E. A. Wadsworth, lieutenant commander, USNR, has resumed his position as planning engineer in the Santa Barbara, Calif., county public works and planning department.

William D. Alexander and **John L. Hoffman,** former Army Engineers, have opened an engineering office at Boise, Idaho, where they will specialize in municipal work, structural design, survey and investigations.

Joseph A. Stackley, major, has returned to the designing division of the state highway department of Delaware.

W. W. Barnes, Jr., major, Corps of Engineers, is now in the engineering department of Ft. Worth, Tex.



W. Vance Baise, chief engineer for the North Carolina State Highway and Public Works Commission, reports his staff hard at work preparing plans for major highway construction work. He has been chief engineer for the state for the last 11 years.

Now superintendent of water distribution for the District of Columbia, Humphrey Beckett has served the nation's capital city for more than half a century. He joined the district highway department in 1895, transferring to the water department in 1901.

A survey of the current conditions in the engineering schools

(Third of a series of reports from leading technical institutions)

Yale University, School of Engineering, New Haven, Conn. — "For some weeks we have been unable to consider new applicants for admission unless they present outstanding credentials. We consider that returning former students and those granted certificates of admission but prevented from matriculating because of the war have priority rights.

"We are accepting new applications for the fall term beginning Sept. 14, dependent upon housing possibilities. There are more applications than the anticipated space to be available. We have housing facilities for undergraduates at present. For married men the university made emergency provisions.

"We are still carrying on Navy V-12 programs for Navy students to be here until next June. Various modifications are under way for the fall program. No specialized refresher courses, but we provide each veteran with a program within his capacity."—Samuel W. Dudley, Dean.

Washington University, Schools of Engineering and Architecture, St. Louis, Mo. —"Upper classes are still smaller than our ultimate capacity. No new students can be accepted until June 17, when we expect to offer the work of the second semester on the freshman, sophomore and junior levels.

"No freshmen or sophomores will be accepted for first semester work until next fall, although there will be opportunity for a limited number of freshmen and sophomores during the summer if they are sufficiently advanced to be admitted to the work of the second semester. This number will be determined by the number now enrolled who withdraw or are dropped.

"At least two married students who registered Feb. 4 have already withdrawn because they could not find living accommodations. Single men can find room and board through the campus Y.M.C.A., though there are limitations there also at the present time.

"For veterans there are refresher courses in algebra and geometry through an extension division. We have not found it possible to extend this program in the School of Engineering itself because we have great difficulty in getting enough teachers in the regular classes, and any new work we are able to offer will be of an advanced nature as it is our purpose to develop graduate instruction and research.

"We had estimated that, beginning in February, we would have room for about 140 new freshmen. We had over 400 applications. We intend to limit our registration and make selections on evidence of superior ability. For the time, being the maximum number of freshmen we can accommodate will be between 275 and 300.

"Plans are being made for a new engineering building, but it will not be possible to have it ready in less than a year and a half. Then we may look forward to an enrollment of approximately 1,000."—A. S. Langsdorf, Dean.

New York University, College of Engineering.—"We are leaving places in our upper classes for our own students who are returning to complete their work with us.

"Enrollment in the day division is limited to approximately 1,000. Registration at the beginning of the present term last October was well over 600. Since that date there has been a constant stream of returning veterans visiting the administrative offices and announcing their intention of resuming their studies at the earliest opportunity. It appears likely that veterans who were former students here will completely fill the day division since all of these men are on "leave of absence" for the duration of their Army service, which fact guarantees them readmission. Moreover, many students who attended the evening division before going into service now wish to study in the day division. For these reasons the college has had to adopt a priority system for the admission of veterans and others with advanced standing. Also, one half the quota for the freshman class will be reserved for veterans. Students will be given preference for admission to other than the freshman class in the following order:

1. Day division students on leave of absence.
2. Evening division students on leave of absence.
3. Students who took their work under the A.S.T. or meteorology programs.
4. Students who completed three or more terms under A.S.T.R.P.
5. Veterans on leave of absence from University College or other schools of New York University provided their advanced standing permits of easy integration into the group programs of the College of Engineering and into degree departments in which the registration is small.
6. Former Navy V-12, or A.S.T. students of other colleges in which engineering is not normally taught, or who took such work in colleges in parts of the country remote from their homes and who have no other college affiliation.
7. Veterans who were former students at nearby colleges.
8. All others.

"With respect to the freshman class, we now have on hand about 1000 applications, and we will have accommodations for about 200 in September and for an additional 200 next February. So we are no longer accepting applications for the freshman class from high school students. For the present, we will continue to accept applications from veterans only.

"We have no living accommodations on or near our campus for married men. We have several plans to cooperate with federal and state housing agencies in this matter but as yet no definite arrangements have been made.

"In civil engineering we have introduced two refresher courses—one in sanitary and one in structural engineering. They are well attended. There is every reason to expect that we may re-offer these in the summer."—M. C. Giannini, Veterans' Coordinator.

Drexel Institute of Technology, Philadelphia, Pa.—"We can at present take more students in the upper classes, favoring former students who have been in the armed forces. The rate of their return has been higher than we anticipated. Soon, however, the promotion of the present underclassmen will so fill the ranks of the upper classes that we shall not be in a position to take new upper classmen at all. On April 1, June 24 and September 23 we could accommodate a reasonable number of transfer students with advanced standing provided their previous work would fit into our curriculum at those points.

"Rooms for single men are available in a limited measure, but accommodations for married couples are so scarce that reluctantly we are forced to discourage such persons from coming to Philadelphia unless they already are assured of living quarters.

"The only significant change we have made in our curriculum to help the veterans is to reduce the pace of the first course in college algebra by one-half. Such students probably will be able to make up this time through their exemption from military training and physical education."—R. C. Disque, Dean of Engineering.

(To be continued)

Second Bay Bridge study before Congress

A resolution requesting that the War and Navy Departments reconsider their unfavorable report made in 1941 on a second San Francisco Bay crossing was recently favorable reported on by the House Naval Affairs Committee and will soon be considered by the House of Representatives (H. Res. 529). In the resolution the War and Navy Departments are specifically requested to consider the feasibility of "a bridge from San Francisco to Bay Farm Island, or a system of dams across San Francisco Bay as provided for in the so-called Reber plan."

The conclusion of the 1941 report concerning the Hunters Point-Bay Farm Island Bridge was that there was at that time "no present or immediately prospective need for a bridge across San Francisco Bay between Hunters Point and Bay Farm Island." However, the House Naval Affairs Committee in their report dated Mar. 13, 1946 (Report No. 1706) on the present resolution states as follows: "From evidence submitted to the committee it appears that the present San Francisco-Oakland transbay bridge has reached its rated capacity and that the continued peace-time economy of San Francisco and adjacent areas requires that early plans be made to construct another crossing which will require from 5 to 7 years to complete."

Meanwhile work continues on second bay bridge studies being made by the State of California, Department of Public Works (see *ENR* Nov. 15, 1945, vol. p. 643 and *ENR* Jan. 24, 1946, vol. p. 111). No report has been made as yet nor is one expected for some time as all possible bridge locations are being considered.

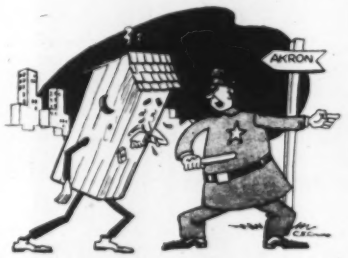
Begin construction on Canton Dam project

Construction work on Canton Dam, the first of five major projects scheduled for construction on the Arkansas River and its tributaries as flood control works, got under way recently.

Crews for the contractors—C. F. Lytle Co., Sioux City, Iowa, and the Amis Construction Co., Oklahoma City, Okla., —moved in their equipment and established an office at Canton, to start work on removing about 2,000,000 cu. yd. of earth preparatory to construction.

The $13,870,000 dam, to be located in Blaine county, Okla., on the North Canadian River, was about 25 percent complete when work was suspended because of the war emergency in 1942.

Outhouses out in Akron, Ohio



While 60 property owners cheered lustily, Akron, Ohio, city councilmen recently debated and then approved a measure to outlaw construction of outside toilets anywhere within the city limits.

The council's Health and Sanitation Committee said that, so far as it was able to determine, Akron would be the first city in the U. S. to ban such construction completely.

The ordinance was designed to balk large-scale conversion of garages into temporary housing units that would utilize outside toilets for their prospective residents. Property owners—many of whom attended the council meeting —objected that such construction would be detrimental to surrounding property.

"Akron is a big town now," commented Nathan Koplin, assistant city law director, "and it favors low-cost housing, but there are standards below which it will not permit builders to go. This is particularly important during the housing shortage."

Just in case the original ban is attacked, councilmen said they had two other restrictive measures ready for use —one requiring that no outside toilets may be built where septic tanks operate satisfactorily; the other prohibiting construction of homes on streets without water and sewer lines.

JOBS OF THE WEEK

GAS PLANT, Alvin, Tex.

Stanolind Oil & Gas Co., Houston, awarded a contract for the construction of a gas plant to Stearns-Rogers Co., Houston. The estimated cost is $2,500,000.

DREDGING, New Jersey.

Arundel Corp., Baltimore, Md., was awarded a contract by the U. S. Engineers, New York, N. Y., for dredging 1,563,500 cu. yd. material in Newark Bay, Hackensack and Passaic Rivers, at $536,281.

FACTORY and WAREHOUSE, Evanston, Ill.

Hibbard, Spencer & Bartlett, Chicago, awarded a contract for factory, warehouse and office to City Wide Builders, Chicago, Ill. The estimated cost is $3,000,000. Engineering Systems, Chicago, Ill., is the engineer.

FORT GIBSON DAM, Oklahoma.

U. S. Engineers, Tulsa, received the lowest bid for constructing Fort Gibson Dam from Leo Sanders, Oklahoma City, Okla., at $11,889,880.

TUNNEL IMPROVEMENTS, New York.

New York City Tunnel Authority, New York, received the lowest bid for Brooklyn land section and plaza at Brooklyn-Battery Tunnel, from E. W. Foley, Inc., Brooklyn, at $2,461,000.

APARTMENTS, Wilmington, Calif.

Western Defense Housing Co., Pasadena, has been awarded a contract for 1,000-family apartments on 62-acre site by Avalon Village Co., Wilmington. The estimated cost is $4,500,000. John N. Douglas, Pasadena, is the architect.

POWER PLANT, Warren, Pa.

Berkebile Brothers, Johnstown, Pa., has been awarded a contract to build a power plant and substation by Pennsylvania Electric Co., Johnstown, at about $5,000,000. Gilbert Associates, Reading, is the engineer.

SHOP BUILDING, San Francisco, Calif.

James I. Barnes Construction Co., San Francisco, has been awarded a contract for a 2-story, steam fitters shop, by Bureau of Yards & Docks, Navy Department, Arlington, Va., at $2,290,000.

Note—Additional bidding and contract news on many projects large and small, including the above items, appear in the Construction News section beginning on page 18.

OBITUARY

Olin Hanson Basquin, 77, vice president in charge of engineering for the Haskelite Manufacturing Corp. of Grand Rapids, Mich., died recently in California. A native of Iowa, Mr. Basquin was a graduate of Ohio Wesleyan and Harvard Universities, and obtained his master's degree and his doctor of science degree from Northwestern University. He became an assistant professor of physics at Northwestern in 1901 and professor of applied mechanics in 1909, which position he held until joining the Haskelite Mfg. Corp. in 1926.

Victor M. Witmer, 84, Milwaukee, Wis., civil engineer and former president of the Milwaukee Structural Steel Co., died March 22. He directed the steel erection work on many prominent Milwaukee and Chicago buildings.

Albert J. Beach, 57, for 35 years a civil engineer for the New England Telephone and Telegraph Co. in Boston, died March 29, in Lexington, Mass. He was a graduate of Massachusetts Institute of Technology.

John Walter LeBreton Ross, 79, civil engineer, Ottawa, Ont., died March 31. Associated with the Dominion Department of Railways and Canals since 1884, Mr. Ross was active in the development of the canal system in Eastern Canada.

Richard H. Dearborn, 72, dean emeritus of the school of engineering at the Oregon State College, died at Portland, Ore., March 21. Educated at Cornell University, from 1935 till his retirement in 1944, he was dean of the school of engineering at Oregon.

David Amos Bridge, 67, of Hazardville, Conn., former president of the New England Road Builders Association, died at Brattleboro, Vt., April 6.

Daniel D. Smith, 90, a retired engineer, died at West Palm Beach, Fla., March 27.

Alvin G. Beard, 83, contractor who built many apartment houses and hotels in St. Petersburg, Fla., died there recently.

Lt. Stuart F. Johnson of Seattle, Wash., died April 1 in Manila, P. I., where he had been assigned with the Corps of Engineers. He left the University of Washington several years ago to work as a civilian on the Alcan Highway, and enlisted in the army after spending a year on the Alaska road work.

Cols. Heavey and Renshaw to New York and Manila

Col. William F. Heavey has assumed command as district engineer of the New York District Office of the U. S. Engineers, succeeding Col. Clarence Renshaw, who is leaving for duty as district engineer in Manila under the new Pacific Ocean Division setup of the Corps of Engineers.

On a Hudson River inspection trip Colonel Renshaw (right) introduces his successor, Colonel Heavey, to some of the New York Engineer District.

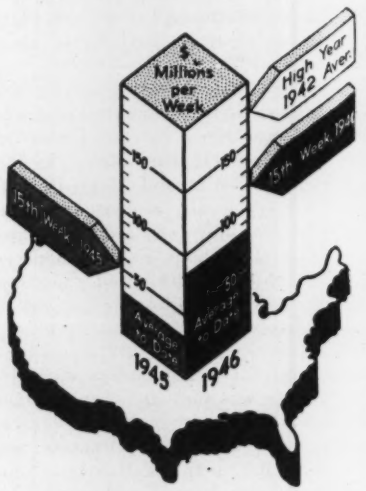
Colonel Heavey, who held the temporary rank of brigadier general throughout the war, organized and commanded the 2nd Engineer Amphibian Brigade, which participated in 87 separate combat landings, from New Guinea to Leyte in the Philippines. Units of his brigade were also the first amphibian engineer troops to land on both Korea and Japan. He wears the Distinguished Service Medal, the Legion of Merit, Bronze Star Medal, Purple Heart with Oak Leaf Cluster, three Bronze Stars on Victory Medal of World War I, five campaign stars on his Asiatic Pacific ribbon, as well as two Bronze Stars on the Philippine Liberation ribbon.

In World War I Colonel Heavey served as company and battalion commander in the 6th Engineers. Between the wars he had military tours of duty at West Point, Fort Belvoir, Fort Knox and Fort Benning, and served two years as assistant district engineer, Louisville District, four years as assistant division engineer, Great Lakes Division, and in the Office of the Chief of Engineers at Washington.

As district engineer Colonel Heavey will direct all military construction within the Second Service Command.

Colonel Renshaw was in charge of the construction of the Pentagon Building in Washington early in the war, later serving as district engineer at Philadelphia, before going to the New York District, where he took command as district engineer in early September, 1945.

CONSTRUCTION ACTIVITY



As Reported this week to ...
Engineering News-Record

CONTRACT VOLUME

Continental U. S. Only
(Thousands of Dollars)

	Week of April 11 1946	Cumulative 1946 (15 wks.)	Cumulative 1945 (15 wks.)
Federal	$13,883	$134,783	$266,397
State & Mun.	25,168	282,284	53,404
Total Public	$39,051	$417,067	$319,801
Total Private	79,809	813,069	146,272
U. S. Total	**$118,860**	**$1,230,136**	**$466,073**

WHERE CONSTRUCTION ACTIVITY ORIGINATED THIS WEEK

Type of Work	Dollar Volume (Thousands) This Week	Cumulative 1946 (15 wks.)	Cumulative 1945 (15 wks.)
Waterworks	$3,175	$31,375	$10,043
Sewerage	995	15,072	8,718
Bridges	3,441	30,268	7,786
Highways	12,769	148,366	34,822
Earthwork, Waterways	2,897	77,358	10,568
Buildings, Public	12,589	85,510	194,914
Industrial	27,978	295,497	104,661
Commercial	47,220	472,259	25,804
Unclassified	7,796	74,431	68,757

NOTE: Minimum size projects included are: Waterworks and waterway projects, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

NEW PRODUCTIVE CAPITAL

	Cumulative 1946 (15 wks.)	Cumulative 1945 (15 wks.)
NON-FEDERAL	$242,335	$182,647
Corporate Securities	101,637	41,867
State and Municipal	140,698	126,480
RFC Loans	.....	14,300
REA Loans	.....	.....
Fed. Aid Highway	.....	.....
FEDERAL	158,320	77,137
Total Capital	$400,655	$259,784

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Apr. '46	334.59	160.83
Building Cost	Apr. '46	254.37	137.50
Volume	Mar. '46	256	112